

**SAND LAKE WETLAND MANAGEMENT DISTRICT
Columbia, South Dakota**

**ANNUAL NARRATIVE REPORT
Calendar Year 2003**



**NATIONAL WILDLIFE REFUGE SYSTEM
FISH AND WILDLIFE SERVICE
U.S. DEPARTMENT OF THE INTERIOR**

REVIEW AND APPROVALS

**SAND LAKE WETLAND MANAGEMENT DISTRICT
COLUMBIA, SOUTH DAKOTA**

**ANNUAL NARRATIVE REPORT
Calendar Year 2003**

Project Leader

Date

Refuge Supervisor

Date

Regional Office Approval

Date

INTRODUCTION

The 12,000 square mile Sand Lake Wetland Management District (WMD), located in north-central South Dakota, encloses a rich diversity of wildlife habitat. The eight county district extends west to the Missouri River and includes part of the James River Basin to the east. The western portion of the district is part of the Coteau du Missouri and is composed of intermediate and short grass prairie. Tall grass prairie and agricultural lands comprise the eastern portion. The headquarters is located at Sand Lake National Wildlife Refuge.

Land is acquired by the Aberdeen Acquisition Office with both fee and easement interests obtained. Approximately 43,738 acres of fee, 228,607 wetland easement acres, 331,452 grassland easement acres and 800 Northern Tall Grass Prairie grassland easement acres are being managed and protected. The station also administers over 14,000 acres of conservation easements on FmHA inventory land. The Sand Lake WMD is responsible for management and protection of 618,597 acres of land.

TABLE OF CONTENTS

A. HIGHLIGHTS

B. CLIMATIC CONDITIONS

C. LAND ACQUISITION

1. Fee Title	2
2. Easements	2
3. Other	5

D. PLANNING

1. Master Plan/CCP	Nothing to Report
2. Management Plan	Nothing to Report
3. Public Participation	7
4. Compliance with Environmental and Cultural Resources Mandates	7
5. Research and Investigation	7
6. Other	Nothing to Report

E. ADMINISTRATION

1. Personnel	8
2. Youth Program	Nothing to Report
3. Other Manpower Programs	Nothing to Report
4. Volunteer Program	11
5. Funding	12
6. Safety	13
7. Technical Assistance	Nothing to Report
8. Other	Nothing to Report

F. HABITAT MANAGEMENT

1. General	14
2. Wetlands	15
3. Forests	15
4. Croplands	16
5. Grasslands	16
6. Other Habitats	Nothing to Report

7. Grazing	17
8. Haying	18
9. Fire Management	19
10. Pest Control	19
11. Water Rights	23
12. Wilderness and Special Areas	Nothing to Report
13. WPA/Easement Monitoring	23

G. WILDLIFE

1. Wildlife Diversity	25
2. Threatened and/or Endangered Species	25
3. Waterfowl	26
4. Marsh and Water Birds	28
5. Shorebirds, Gulls, Terns and Allied Species	28
6. Raptors	28
7. Other Migratory Birds	Nothing to Report
8. Game Mammals	28
9. Marine Mammals	Nothing to Report
10. Other Resident Wildlife	28
11. Fisheries Resources	29
12. Wildlife Propagation and Stocking	Nothing to Report
13. Surplus Animal Disposal	Nothing to Report
14. Scientific Collections	Nothing to Report
15. Animal Control	29
16. Marking and Banding	30
17. Disease Prevention and Control	30
18. Partners for Fish and Wildlife Program	30

H. PUBLIC USE

1. General	32
2. Outdoor Classrooms - Students	32
3. Outdoor Classrooms - Teachers	Nothing to Report
4. Interpretive Foot Trails	Nothing to Report
5. Interpretive Tour Routes	Nothing to Report
6. Interpretive Exhibits/Demonstrations	Nothing to Report
7. Other Interpretive Programs	Nothing to Report
8. Hunting	34
9. Fishing	38
10. Trapping	38
11. Wildlife Observation	38
12. Other Wildlife Oriented Recreation	Nothing to Report
13. Camping	38
14. Picnicking . . . . .	.Nothing to Report
15. Off-Road Vehicling	Nothing to Report

16. Other Non-Wildlife Oriented Recreation	.	.	.	.	.	Nothing to Report
17. Law Enforcement	.	.	.	.	.	39
18. Cooperative Associations	.	.	.	.	.	Nothing to Report
19. Concessions	.	.	.	.	.	Nothing to Report

I. EQUIPMENT AND FACILITIES

1. New Construction	.	.	.	.	.	Nothing to Report
2. Rehabilitation	.	.	.	.	.	40
3. Major Maintenance	.	.	.	.	.	40
4. Equipment Utilization and Replacement	.	.	.	.	.	40
5. Communications	.	.	.	.	.	Nothing to Report
6. Computer Systems	.	.	.	.	.	Nothing to Report
7. Energy Conservation	.	.	.	.	.	Nothing to Report
8. Other	.	.	.	.	.	Nothing to Report

J. OTHER ITEMS

1. Cooperative Programs	.	.	.	.	.	Nothing to Report
2. Other Economic Uses	.	.	.	.	.	Nothing to Report
3. Items of Interest	.	.	.	.	.	Nothing to Report
4. Credits	.	.	.	.	.	41

K. FEEDBACK

Nothing to Report

A. HIGHLIGHTS

The Sand Lake National Wildlife Refuge Complex celebrated the 100th anniversary of the establishment of the refuge system on March 14, 2003. May the Blue Goose fly high forever!

The year 2003 was extremely dry in the western two 2/3 of the WMD. Many counties issued burn bans which curtailed any prescribe fire activities.

The District experienced a high interest in haying and grazing on WPAs due to the extended dry conditions. Bids were again at unprecedented high levels.

Interest in the Partners for Fish and Wildlife Program continues to grow across the WMD. In 2003, a total of 105 agreements were signed with wildlife cooperators who agreed to participate in the creation, restoration, management or enhancement of over 16,200 acres.

Noxious weed control efforts dominated the summers activities.

Scott Glup left the Sand Lake WMD to become the Project Leader at Litchfield WMD in Minnesota. The new Wetlands Manager, Jay Peterson, came from LaCreek NWR.

After 15 years as Project Leader of the Sand Lake NWR Complex, John Koerner retired in 2003. Gene Williams of Lake Andes became the new Project Leader in October.

R-9, Division of Engineering, Brian Becker completed a temporary (2-month) duty assignment as Acting Project Leader at Sand Lake in July.

Sand Lake NWR Complex held its first Hunter Education class at the refuge headquarters.

B. CLIMATIC CONDITIONS

The continental climate of the WMD is characterized by cold winters and hot summers with rapid fluctuations of temperatures. This cool, dry, subhumid climate has an annual precipitation of 15 inches in the west and 19 inches in the east. Precipitation is normally heaviest in late spring and early summer. The average seasonal snowfall varies from 25 inches in the western counties to 35 inches in the eastern portion. The most extreme cold temperatures vary from -40° to -45°F to summertime highs up to 112°. Intense thunderstorms occur frequently in summer. In winter, snow and high winds bring blizzard conditions to the area. The prevailing wind is from the northwest, and the average wind speed is highest, 13 miles per hour, in spring. The growing season varies from 109 to 112 days. The western 2/3rds of the WMD experienced well below normal precipitation in 2003 while the eastern 1/3 received just enough rainfall during June and July to provided adequate moisture for cover and crops in the area. Total precipitation recorded at the refuge headquarters for the year was 24.22 inches, which was 3.92 inches above the 30-year average of 20.30 inches.

C. LAND ACQUISITION

1. Fee Title

Waterfowl Production Areas are lands purchased by the Service under the provisions of the Migratory Bird Conservation Act. Funding for these purchases comes from the sale of Migratory Bird Hunting and Conservation Stamps (Federal Duck Stamp). These lands are owned by the Service in fee title and managed to provide high-quality wetlands and nesting cover primarily for waterfowl and other migratory birds. Many other wildlife species also benefit from these areas.

The Service owns and manages 162 WPAs for a total of 43,738 acres within the WMD. WPAs range in size from 18 acres to over 3,200 acres. Habitat types are approximately 64 percent grassland, 35 percent wetland, 0.3 percent woodland and 0.7 percent other habitat throughout the WMD.

The acquisition of additional properties as Waterfowl Production Areas is generally approved without opposition. However, we have determined that our efforts are better spent purchasing easements and pursuing Partners for Wildlife projects. No new WPAs were acquired in 2003.

2. Easements

a. Wetland Easements

The wetland easement program was authorized by Congress on August 1, 1958, and, like WPAs, is financed by receipts from the sale of Federal Duck Stamps. The Service pays willing landowners one lump sum payment for the right to prohibit draining, burning, leveling, or filling natural wetlands. The wetlands must be of value to waterfowl before they are considered for easement purchase. The perpetual easement encumbers only the wetland acres on the tract.

Wetland easements do not prohibit or deter normal farming practices such as cropping, haying, grazing, plowing, or tilling wetlands when they are dry due to natural conditions.

Sand Lake WMD currently preserves and protects 228,607 acres of wetlands with waterfowl management easements. All wetlands protected by wetland easement are inspected annually by Service personnel for potential violations.

Table 1 provides the results of the 2003 wetland easement acquisition program.

Table 1, 2003 Wetland Easement Acquisitions

County	#	Consideration \$	Acres	Total Acres
Brown	4	130,040	266	29,961
Campbell	-	-	-	11,601
Edmunds	7	98,910	366	57,560
Faulk	4	27,100	125	45,991
McPherson	4	39,200	320	48,385
Potter	-	-	-	10,466
Spink	7	64,340	237	16,717
Walworth	2	10,700	101	7,926
Total	28	370,290	1,415	228,607

The average paid per wetland acre was \$261.69 in 2003.

Due to a lack of funding and a Department of Interior overhaul to the realty appraisal process, a number of landowners willing to sell wetland and grassland easements to the Service have been placed on a priority list or temporarily placed on hold. At year's end, the "new" appraisal process was still in a state of development which greatly slowed any potential acquisitions.

b. Grassland Easements

In 1989, the Service began the grassland easement program to protect important nesting cover and enhance water quality on privately owned grasslands. Like wetland easements, grassland easements are perpetual, with the Service purchasing specific rights to the grasslands. The landowner retains ownership and grazing is unrestricted. However, the production of agricultural crops is prohibited, and haying is permitted only after July 15 annually to reduce disturbance to ground nesting birds. All grassland easement tracts are likewise protected by wetland easements. Grassland easements are inspected annually in July for possible violations.

Each potential easement is evaluated for its value to wildlife. Large native grass tracts with good wetland complexes are given the highest priority. High priority also goes to good stands of grass enrolled in the Conservation Reserve Program (CRP) that have good wetland complexes. Occasionally, a grassland easement is acquired on a tract with land still in crop production. The landowner enters into an agreement to seed the cropland back to a recommended grass mixture to qualify

for the easement. A Sand Lake WMD policy also requires that all drained wetlands must be restored for an area to qualify for grassland easement. Exceptions are given in cases where the restoration would result in flooding impacts to buildings, roads, etc.

Tracts generally are greater than 160 acres and must have a good wetland complex on or adjacent to the tract to be considered for an easement. Our ability to make biological assessments of proposed easements has been greatly improved with the use of technology developed in the Bismarck HAPET Office. Through the use of GIS and NWI, a map was developed for the WMD that has placed a breeding pair value on every 40 acre tract within the WMD. This map, often referred to as the "Thunderstorm Map" due to its resemblance to a weather radar screen, predicts the number of waterfowl pairs any given area can attract based upon the wetland complex found on and around the tract.

Individual grassland easements within the WMD range in size from approximately 40 to over 9,000 acres. At this time, there are areas of over 20,000 acres of contiguous grassland that are protected by grassland easement in the Sand Lake WMD. Currently there are 331,453 acres protected by the grassland easement program within the Sand Lake WMD.

Table 2, provides the results of the 2003 grassland easement acquisition program.

Table 2, 2003 Grassland Easement Acquisition

County	#	Consideration \$	Acres	Total Acres
Brown	-	-	-	23,599
Campbell	3	78,000	916	12,647
Edmunds	6	127,200	1,028	67,956
Faulk	3	278,700	2,545	94,670
McPherson	7	221,400	2,367	97,225
Potter	-	-	-	14,823
Spink	2	41,800	257	9,735
Walworth	2	11,750	109	10,798
Totals	23	758,850	7,222	331,453

The average paid per grassland acre was \$105.07 in 2003.

Grassland easements provide important wildlife habitat throughout the WMD. Recent studies conducted on grassland easements indicate high use by ground nesting birds of all species.

Due to a funding shortfall in 2003, we have focused our acquisition efforts for grassland easements on properties with greater than 80 indicated waterfowl pairs per square mile. This situation has unfortunately required us to pass on numerous opportunities to protect high quality waterfowl breeding habitat. The race to protect grassland habitat before it is converted for agricultural purposes is fast paced as always.

c. FmHA Conservation Easements

The Farmers Home Administration (FmHA) of the U.S. Department of Agriculture is required by Executive Order 11990 to preserve and protect all wetlands which are in FmHA ownership. The 1985 and 1990 Food Security Acts (Farm Bill) gave direction as to how and by whom this should be accomplished. The Service cooperates with FmHA by recommending "conservation easements" on FmHA inventory properties. Once these properties are sold back into private ownership, the Service accepts the responsibility of enforcing the terms of the conservation easements. Presently, 15,152 acres of former FmHA inventory properties are under some type of conservation easement. All of these easements, at a minimum, protect the wetlands from burning, draining, or filling. In some cases, the easements protect adjacent upland habitat as well. Some upland easements protect the land from farming activities but permit grazing and haying after July 15, while others restrict nearly all uses of the land and will be managed similar to WPAs.

In total, Sand Lake WMD was responsible for over 618,950 acres of WPAs and easements at year's end.

3. Other

In 2002, an agreement was finalized to provide almost \$600,000 to the Sand Lake WMD for the purpose of restoring and perpetually protecting ruddy duck breeding habitat. The project has a goal to reseed 1,852 acres of crop ground to grass. The money for this program is the result of a court settlement for the PEPCO pipeline rupture at Chalk Point in Aquasco, MD, which killed 553 ruddy ducks. The rupture caused over 111,000 gallons of oil to leak into the Patuxent River and nearby tributaries. This project is one of three settled by the company. The first grassland easement acquisition agreement was completed this year in McPherson County with James Schumacker. Approximately 80 acres of crop ground was seeded to native grasses. The restoration and easement costs were paid for with funds from this project. There are three other projects in the works at this time encompassing approximately 500 acres.

In the late 1990s, Ducks Unlimited began a fee title acquisition program to protect high quality waterfowl breeding habitat. Due to the high quality of waterfowl habitat in this part of South

Dakota, much of their efforts have been directed within the WMD. By year's end, Ducks Unlimited owned over 17,000 acres in McPherson and Edmunds Counties.

These acquisitions are part of a concept that DU calls it's revolving land program. Ducks Unlimited intends to buy land in fee title, restore the wetlands and grassland, place FWS perpetual easements on the wetlands and grassland, and sell the properties back to conservation buyers.

This year Ducks Unlimited held its first ever online auction to sell properties acquired as part of the revolving lands program. The first tract sold was part of the Schurr-Stoner Complex located west of Ipswich in Edmunds County. DU anticipates that online auctions will be held at regular intervals as the program continues to grow.

The eastern edge of the Missouri Coteau in North and South Dakota has been the focus of studies and investigations by wind energy companies for several years due to the high average daily wind speed in this area. Currently in South Dakota, one wind farm exists in Hyde County; however, companies are beginning to focus their attention to portions of the Sand Lake Wetland Management District as well. This year, District personnel were contacted by a wind energy company concerning potential wind turbine sites on properties protected by wetland and/or grassland easement. Superior Renewable Energy of Houston, TX, had acquired numerous options from landowners in McPherson, Edmunds and Walworth Counties and was in the beginning stages of designing a sighting plan for future turbines. Staff prepared maps to identify US Fish & Wildlife Service property interests and discussed policy (policy currently permits one windmill per 1/4 section of Service interest lands) relative to sighting wind turbines on easement interests during a January meeting with a Superior Renewable Energy representative. Since that meeting, this office has not been contacted, nor have we heard of any activity regarding wind energy within the WMD.

D. PLANNING

1. Master Plan

Nothing to Report

2. Management Plan

Nothing to Report

3. Public Participation

Public notices soliciting public involvement were published for two compatibility determinations involving activities such as permitting Rural Water Systems to cross easements to provide cattle watering systems for ranchers and for the temporary de-watering of a wetland to repair a flowing well on the Christianson WPA in Faulk County.

4. Compliance with Environmental and Cultural Resource Mandates

No historic or prehistoric resources have been identified on WPAs within the WMD. The WMD lies within the Upper James and Missouri Coteau Archeological Regions. Documented occupation of the area spans a 10,000-year period. The probability that significant cultural resources are present on some of the thousands of acres of native prairie is above average. The Regional Archeologist is consulted during the planning phase of any proposed project to determine the need for a cultural resource inventory in consultation with the South Dakota Historic Preservation Office.

5. Research and Investigation

In 2001 Ducks Unlimited began a waterfowl nesting study involving WPAs, The Nature Conservancy lands, and DU properties. The study is designed to look at nest densities and success on native grasslands with different land uses. The study continued into 2003. At this time, it is too early to make any conclusions.

In 2003, the Northern Prairie Wildlife Research Station once again conducted a study to look at differences in waterfowl nesting use of lands enrolled in the Conservation Reserve Program. The study is designed to compare CRP planted to tame grass vs. native grasses. Study sites were located in McPherson County of the Sand Lake WMD. A study site was also located in Marshall County of the Waubay NWR Complex.

6. Other

Nothing to Report

E. ADMINISTRATION

1. Personnel

Several personnel changes took place in 2003. After 15 years at Sand Lake, Project Leader John Koerner retired in April. Gene Williams was selected as the new PL. Gene's previous stations include Lake Andes NWR Complex and Yukon Flats NWR as well as other stations in Regions 3 and 6. Wetlands Manager Scott Glup left the Sand Lake NWR Complex to become the Project Leader at Litchfield WMD in Minnesota. The new Wetlands Manager selected was Jay Peterson, whose previous duty stations include J. Clark Salyer NWR, LaCreek NWR and Lake Andes NWR Complex. The Complex hired four seasonal employees on 180 day appointments. These seasonals assisted with spraying weeds, lawn work, landscaping, visitor services maintenance, biological work, and a variety of other duties as assigned.

Brian Becker from Region 9 Engineering was Acting Project Leader from 5/19-7/18. The purpose of the appointment was to fulfill a requirement of the "Stepping up to Leadership" program. Brian and his family lived in the Refuge housing on Weismantel Grade during their stay.

**2003 Permanent Sand Lake National Wildlife Refuge Complex
Staff on one of John Koerner's last days as Project Leader.**

Back Row (L - R)

Allen Olson, Beth Ullenberg, Ron Frohling, Scott Glup, Don Soderlund, Bill Schultze, Neil Powers,
John Jave

Front Row (L -R)

Berle Meyers, Bridgette Flanders-Wanner, John Koerner, Marcia Haaland, Eric Hoggarth

Figure 2, 2003 Sand Lake National Wildlife Refuge Complex Staff

Back Row (L - R)

Brian Becker, Don Soderlund, John Jave

Middle Row (L -R)

Bridgette Flanders-Wanner, Tami Imm, Ron Frohling, Berle Meyers, Marcia Haaland

Front Row (L - R)

Neil Powers, Joel Wilson, Beth Ullenberg, Ryan Smith, Sam Cahoy, Josh Wagers, Eric Hoggarth, Bill
Schultze

Not Pictured:

Allen Olson

Table 3, depicts the employees who were on duty at the end of 2003:

Table 3, Sand Lake Refuge Employees

Employee Name and Title	Entered on Duty	Status
Eugene Williams, Project Leader	10/03	PFT
John Jave, Deputy Refuge Manager	1/92	PFT
Jay Peterson, Wetland Management District Manager	10/03	PFT
William Schultze, Complex Wildlife Biologist	5/76	PFT
Beth Ullenberg, Outdoor Recreation Planner	12/99	PFT
Marcia Haaland, Administrative Officer	8/88	PFT
Berle Meyers, Heavy Equipment Operator	4/71	PFT
Ronald Frohling, Carpenter	5/77	PFT
Don Soderlund, Refuge Operations Specialist	12/01	PFT
Neil Powers, Refuge Operations Specialist	1/01	PFT
Eric Hoggarth, Biological Technician	6/02	PFT
Al Olson, Private Lands Biologist	10/97	PFT
Bridgette Flanders, Wildlife Biologist Trainee	7/02	PFT
Tami Imm, Biological Technician	5/03	TEM
Josh Wagers, Biological Technician	5/03	TEM
Joel Wilson, Biological Technician	4/03	TEM
Ryan Smith, Biological Technician	5/03	TEM
Sam Cahoy, Volunteer	6/03	VOL

2. Youth Program

Nothing to Report

3. Other Manpower Programs

Nothing to Report

4. Volunteer Program

The Complex also had volunteer Sam “Chip” Cahoy on duty during the summer. Sam was an Aberdeen Central H.S. Graduate in 2003 and now attends South Dakota State University, where he is majoring in Wildlife and Fisheries Sciences. Sam worked with the seasonal crew,

but also assisted Refuge Managers and Biologists with various field work. The Refuge tried to get Sam involved with as many different aspects of refuge management as possible. Thanks for all the hard work, Sam!

5. Funding

Funding for the Sand Lake Complex for the past six fiscal years is shown in Table 4 below.

Table 4.

Fiscal Year	1121	1260	1230	6860	Fire	Total
2003	64,800	1,056,400	3,500	3,800	7,600	1,136,100
2002	54,400	964,900	3,500	3,800	14,214	1,040,414
2001	107,100	814,420	4,900	3,800	48,100	978,320
2000	113,000	838,320	8,500	3,000	430	963,250
1999	75,200	666,271	8,630	3,300	2,800	756,201
1998	61,000	621,750	8,500	3,300	3,500	698,050

6. Safety

Safety is a top priority at the Sand Lake Refuge Complex. Staff safety meetings were conducted throughout the year and often covered topics that may pose hazards to employees on a daily basis. This years' safety meetings included instruction on back safety/proper lifting techniques, load securement, seatbelt use and ergonomics in the workplace.

Unfortunately, the first safety meeting of the year addressing safe winter driving hit all too close to home. One staff member was involved in a rollover accident that fortunately did not result in any major bodily injuries. The government operated vehicle was completely totaled in the mishap. The accident was caused when the driver of the vehicle hit an unexpected patch of ice and lost control, causing the vehicle to slide into the road ditch and rollover onto the roof.

Stemming from a major safety emphasis started in 2002, load securement training continued with training for all new staff annually. Load securement trainers also provided training for stations without trainers throughout the state.

Safety Officers from the regional office conducted a formal safety audit/inspection of the Sand Lake facilities to identify safety concerns that pose potential hazards to employees. Several items were found that the station will work to correct in the near future.

7. Technical Assistance

Nothing to Report

8. Other

Nothing to Report

F. HABITAT MANAGEMENT

1. General

Located in north-central South Dakota, the WMD consists of the following eight counties: Brown, Campbell, Edmunds, Faulk, McPherson, Potter, Spink, and Walworth. In addition, Sand Lake WMD is responsible for administering two additional counties (Dewey and Corson) for FmHA inventory properties.

The WMD is located within three distinct physiographic regions: the Missouri Coteau, the James River Basin, and the Lake Dakota Plain.

The WMD is located wholly within the Prairie Pothole Region of the upper Great Plains. It is also part of the Prairie Pothole Joint Venture area, a geographic region which relates to the North American Waterfowl Management Plan. The Fish and Wildlife Service (Service) has management and administrative responsibility on essentially four different land holdings. These holdings include waterfowl production areas, wetland and grassland easements and Farmers Home Administration easements (FmHA).

This region of South Dakota was once dominated by native prairie vegetation. The tallgrass prairie is primarily east of the WMD; however, a small portion of southeastern Brown and northeastern Spink Counties are included in the tall grass prairie zone which was dominated by big bluestem, little bluestem, switchgrass, and Indian grass. Few tall grass prairie tracts remain within the WMD.

The mixed-tall grass transition zone of the James River Valley was once dominated by Western wheatgrass, big bluestem, and porcupine grass. Much of this zone has been farmed; however some remnant prairie tracts still exist particularly in areas with high water tables and numerous shallow wetlands.

Within the mixed-tall grass zone in northeastern Brown County is a localized region of very sandy soil known locally as the Hecla "sandhills". This area was dominated by big bluestem, sand bluestem, prairie sandreed, and needle and thread. Due to its sandy nature and high water table, portions of this area have not been farmed. However, recent no-till and minimum-till farming techniques and increasing property taxes have resulted in renewed interest in conversion of the last unplowed prairie in this area. These remaining tracts of native prairie are ecologically probably the rarest type of remaining prairie within the WMD and have one of the greatest probabilities of conversion.

The mixed grass zone of the central and western portions of the WMD was dominated by Western wheatgrass, blue grama, needle and thread, and green needle grass. From 30% to 50% of this prairie remains as of today.

Of the almost 9,000 square miles located within the WMD, over 3,000,000 acres (56 percent) have been converted to cropland; another 718,740 acres (13 percent) are converted to tame grass hayland, and the remaining 1,756,330 acres (31 percent) are still in native prairie.

Two Thousand Three marked the first year in the last three where annual precipitation amounts recorded at the Refuge exceeded the long term average. The majority of the precipitation occurred from April-June. However, by the end of the growing season, in all counties of the WMD except Brown, grasses were clearly stressed with many species not reaching full annual growth potential and reduced forage and seed production. Many privately owned pastures had little if any residual vegetation growth remaining by years end. Most counties within the WMD began the growing season well below average moisture levels. For many, this trend continued throughout the growing season and into the winter months. Ranchers will have trouble finding water in their pastures in 2004 if late winter snows and spring rains don't assist them.

2. Wetlands

Even though drainage and other wetland-decimating factors have taken their toll, prairie wetlands are still a prominent part of the South Dakota landscape over many parts of the WMD. The National Wetland Inventory process has identified 577,327 acres located within the WMD. These include basin-type wetlands ranging from .1 acre temporary wetlands to large glacial lakes to major rivers and smaller tributaries.

Wetlands went into the spring below average condition with most temporary and seasonal and many semi-permanent wetlands dry or nearly dry. Below normal spring runoff occurred due to an exceptionally mild winter. Spring rains in late April thru early June filled wetlands in parts of the WMD back to capacity and provided late nesting waterfowl species optimal conditions. The remaining part of the summer was very dry resulting in total evaporation of almost all remaining wetlands within the district. Fall precipitation was also below average causing wetlands to continue to move toward the dry end of the spectrum. At years end, McPherson County was one of the few remaining bright spots within the WMD. This was due primarily to the topography of the county which includes undulating hills and deep depressional wetlands. Years of above average precipitation filled these basin to well above normal capacity. Even after three years of below average precipitation, many semi-permanent wetlands in this area are still slightly above normal to normal in size.

3. Forests

On Service-owned lands within the WMD, woodland vegetation is limited to approximately 0.3 percent of the land base. The majority of these acres consist of trees planted before the land came into Service ownership. The remaining acres are comprised of native trees and trees established by the Service. The practice of establishing trees on WPAs is no longer implemented.

Tree and shrub plantings have been used throughout the WMD to provide food and cover for migratory song birds and resident wildlife. These plantings were placed on large WPAs where they theoretically would not detract from the nesting cover needs of the area. Like food plots, tree and shrub plantings were never established in native prairie habitats.

Shrub and bush species were primarily used in these plantings because they are less attractive to avian predators than large, tall tree species. The presence of avian predators can greatly reduce the nesting success and brood survival of ground nesting birds.

4. Croplands

Cropland within the WMD was limited to food plots. Food plots are small crop fields established on WPAs to provide food for wildlife species. Food plots in the WMD were typically developed on WPAs that have good upland to wetland ratios so they would not significantly detract from the available nesting habitat in the area. They were usually established in fields in which the existing tame grass stand was in poor condition. The grass stand was plowed and utilized as a food plot for several years. Eventually the food plot was reseeded back to a grass mixture for nesting habitat. Food plots in the WMD ranged in size from 5 to 30 acres and were never established in native prairie fields. The practice of establishing food plots on WPAs is no longer implemented.

Sand Lake WMD completed the final stages of converting all remaining food plots back to grass this year. Grass seed procured through an agreement with a private seed harvesting company was used to seed all of the food plots. The majority of the seed planted was harvested from district WPAs. Several issues contributed to our decision to convert the food plots back to grass including poor cooperators participation, decreased interest by local wildlife conservation groups, weed problems and changing priorities.

5. Grasslands

Grassland vegetation makes up approximately 63 percent of the 43,738 acres of WPAs in the WMD. Of these grassland acres, approximately 60 percent is native prairie grassland and 40 percent is reseeded tame or native grass and forb species.

Approximately the eastern one-third of the WMD is referred to as the mixed-tall grass transition prairie which also includes the sandhills in the very northeast corner of the WMD. The key native grassland species in the mixed-tall grass transition prairie are Western wheatgrass, big bluestem, and porcupine grass. The sandhills have similar species to the rest of the mixed-tall grass transition prairie, but the species are more adapted to sandy soil conditions. Key native grassland species in the sandhills are big bluestem, sand bluestem, prairie sandreed, and needle and thread. The majority of the land in the eastern one-third of the WMD has been farmed; however, some of the land has been seeded to tame grass species after being farmed.

The western two-thirds of the WMD is considered the mixed grass prairie. The key native grassland species in the mixed grass prairie are western wheatgrass, blue grama, needle and thread, and green needlegrass. This portion of the WMD is approximately 50 percent native prairie and 50 percent land which is being farmed or has been converted to tame grass species for production purposes or as part of a USDA Farmbill program. This area contains the majority of the WPAs within the WMD.

In general, both the range condition and vegetative condition of WPAs is in fair condition. The three primary reasons the grasslands are not in better condition is a historic lack of prescribed management treatments, poor condition of the grasslands when the WPAs were purchased, and noxious weed invasion.

Many of the WPAs were overgrazed prior to their purchase. These WPAs were often rested for long periods of time after purchase which encouraged cool season exotics to further degrade the grasslands. Grassland species of the Northern Great Plains evolved under periodic disturbance and defoliation from buffalo and fire. This periodic disturbance is what kept the grassland species healthy for thousands of years and is still what is needed to keep them healthy today.

Our current management strategy focuses on using an active management philosophy to increase the use of management tools such as haying, grazing, prescribed fire, and rest. This philosophy selectively manages for desirable plants species while increasing the frequency of management treatments in an effort to improve the range and vegetative condition of our habitats. Generally, management treatments are applied every two or three years with periods of rest implemented in between treatments. At times, multiple annual treatments may be used to provide a greater focus on reducing non desirable plants. As habitats improve, we will likely begin moving toward an approach that focuses on maintaining our habitats in a prime condition and incorporating longer periods of rest.

6. Other Habitats

Nothing to Report

7. Grazing

Prescribed grazing is the primary management tool used to manipulate grassland habitats within the Sand Lake WMD. For the second year in a row, dry conditions across the WMD precipitated an increased interest in grazing opportunities on WPAs. Not only did bid prices increase from cooperators, but their willingness to improve or construct facilities related to grazing also increased. All grazing was let for bid in the Sand Lake WMD with bid prices averaging \$12.93 an AUM across the district, an increase of \$5.73 per AUM over 2002. Even with the increased interest and three years of below average precipitation, few areas would be managed through grazing at the Service established price of \$13.52 per AUM. This is due in part to the poor grassland condition, large amount of work required for facility repair, and the expense of moving livestock.

Increased and improved facilities on many WPAs within the district during the past few years has improved our ability to utilize grazing to begin to improve and enhance grassland habitats for the benefit of grassland nesting migratory bird species. Continued facility improvement is still needed to increase our abilities to proactively manage these properties as many units have deteriorating fences or in some cases no boundary fences at all.

The key to a successful prescribed grazing management program is willing cooperators who are ultimately attracted to working with us by the quality of our facilities and our lands. Delays in implementing or maintaining working fences on district WPAs has resulted in grasslands with heavy layers of litter choking out new desirable growth. This condition has also lead to very low vegetative vigor, decreased height and density of upright cover, and noxious weed infestations.

Many of these WPAs have native prairie dominated by Kentucky bluegrass and/or smooth brome. Although the native plant species are still largely present, they are suppressed by invading cool season exotic grasses. Recent facility development has begun to slowly improve the quality of our native prairie grasslands and our ability to manage WPAs through the use of livestock.

Grazing is used on native prairie primarily to remove litter buildup and to give the native grasses an advantage over the ever present and suffocating stands of Kentucky bluegrass and smooth brome. Grazing on native prairie is usually accomplished using a high intensity short duration spring, early summer, or fall treatment.

Grazing of tame grass plantings is often longer duration applied during late spring and summer. We have found that a longer duration graze on tame grasses still results in good habitat conditions in the following year and the longer duration grazes are more attractive to cooperators.

Poor habitat condition results in poor wildlife habitat. In order to achieve the purposes for which these WPAs were established, regular prescribed management of the grasslands must be accomplished. Although the use of grazing is somewhat limited, it is still the best and most socially accepted method available to us.

Prescribed grazing was implemented on 6,096 acres on 20 WPAs for an average of 305 acres per WPA. Grazing units ranged in size from 100-1,720 acres. Livestock typically grazed on WPAs for 15-90 days with most averaging 30-45 days. A total of \$75,756.87 was paid by the permittees for grazing.

8. Haying

Haying is used primarily on tame grass plantings for litter removal on tracts where other management options are limited. Haying is also used to “set-up” fields with heavy infestations of Canada thistle in preparation for fall herbicide applications. Haying during slow growth or dormant time frames can be very successful in maintaining good habitat conditions the following year.

In almost all cases, haying is delayed until after July 15 to minimize disturbance to ground nesting birds. At times, haying is permitted prior to July 15, but only in extreme circumstances involving Canada thistle infestations. In these situations, Canada thistle infestations are hayed prior to seed dispersal followed by a fall herbicide application. Results

have indicated that this method is very effective in reducing Canada thistle stand densities and tends to weaken plants that return the following growing season.

For the second year in a row, excessively dry conditions across the majority of the WMD greatly increased interest in haying opportunities on district waterfowl production areas. Over 75 bid packages were sent out to prospective cooperators. Most units received multiple bids with some as high as \$53.33 per acre. Bids of this nature are atypical and were undoubtedly drought driven. A total of \$19,505.09 was paid by permittees for haying also through the bid system. The average paid per acre was \$24.14, an increase of \$0.24 per acre over last year's unprecedented high.

Haying was implemented on 1,133 acres. Twenty units were hayed averaging just under 57 acres per WPA. Hay units ranged in size from 22 acres to 120 acres.

9. Fire Management

Several prescribed burns were scheduled for the 2003 spring field season in Brown, Edmunds, Campbell and McPherson Counties. Dry conditions accompanied by high fire danger lead the Brown and Edmunds County Commissions to enact temporary burning ordinances which prohibited all open burning with the exception of a few very specific instances.

Wildfires spurred on by dry conditions burned approximately 285 acres of the Ryman and Mardian WPAs in Brown County. This fire was caused by a negligent and careless neighbor who was shooting at unexploded fireworks just off of the WPA. The destruction of the wildlife to the WPA was exacerbated by the local rural fire department that responded to the call. As part of their containment strategy, the fire department directed a local landowner to disk approximately 9 acres of the WPA. Since this incident, we have contacted the rural fire department and requested that they only use this practice as a last resort in the future.

Due to logistics and time constraints caused by the county burn ordinances, prescribe fire activities were suspended within the WMD. No fall prescribe fires were scheduled.

10. Pest Control

The amended Federal Noxious Weed Control Act of 1990 is a Federal mandate that specifies that each Federal land management agency shall cooperate with State governments to establish integrated pest management systems to control noxious weeds on Federal lands under their jurisdiction. Seven species of plants are listed by the State of South Dakota as noxious weeds. An additional 15 species have been declared noxious in one or more counties. South Dakota noxious weeds are defined by the State Department of Agriculture to be detrimental to the production of crops or livestock. The Weed and Pest Control Commission has designated certain weeds as noxious because of their difficulty to control and the costs associated with lost production. All of the designated noxious weeds have been introduced from another continent and have flourished in the absence of natural controls. Table 5 lists South Dakota designated noxious weeds.

Table 5.

Common Name	Scientific Name
Field bindweed	<i>Convolvulus arvensis</i>
*Leafy spurge	<i>Euphorbia esula</i>
*Canada thistle	<i>Cirsium arvense</i>
Perennial sowthistle	<i>Sonchus arvensis</i>
Hoary cress	<i>Cardaria draba</i>
Russian knapweed	<i>Centaurea repens</i>
Purple loosestrife	<i>Lythrum salicaria</i> & <i>L. virgatum</i> (all hybrid crosses thereof)

* Primary noxious weeds within the WMD

Canada thistle is the primary noxious weed of concern within the Sand Lake WMD. The mid to late 1990's presented land managers with the unique experience of record or near record amounts of annual precipitation. This situation combined with cool spring and fall temperatures exacerbated already present noxious weed problems. These climatic conditions favored Canada thistle very well and unfortunately encouraged its spread much faster than our control methods could keep up. Thistle invasion is responsible for the degradation of thousands of acres of grassland within the WMD.

In 2003, a new invasive weed species hit the radar screen in McPherson County. Yellow toad-flax is beginning to invade numerous acres of tame and native prairie habitats on at least 2 WPAs (West and Perch Lake). Thus far we have identified the problem and are monitoring the spread of the plant until proven control methods are found. In 2003, approximately 10 acres of Yellow toad flax exists within the WMD.

Yellow toad flax spreads at an alarming rate and tends to be a late bloomer making identification difficult during our typical time frame for herbicide applications on Canada thistle. The SD Department of Agriculture is in the beginning stages of accessing the problem but at this point has not offered any sure fire control techniques. The Gobel Ranch owned by Ducks Unlimited in McPherson County is also experiencing an invasion of Yellow toad flax. They have established treatment plots and are working closely with herbicide representatives to try and find a herbicide that will effectively control the spread of this species.

Annual resources dedicated to the control and suppression of Canada thistle and other noxious weed species consumes tens of thousands of dollars of operating funds and hundreds of hours of staff time. Unfortunately, management practices often times revolve around the control of noxious weed species.

The WMD has implemented an integrated pest management approach for control of noxious weeds. Techniques are chosen based on control objectives for each unit, habitat types, resources available for control, and potential costs. The following methods of control are currently used within the Sand Lake WMD:

a. Biological Control

The introduction of insects that attack noxious weed infestations is the primary biological control technique used on the Sand Lake WMD. These host specific insects when used alone will not stop the spread of noxious weeds, but are used as one component of an integrated pest management program. These plant-feeding insects reduce the competitive advantage of the noxious weed species by reducing seed production, lowering plant vigor, and making plants more susceptible to naturally occurring diseases. Several species of biological control insects have been introduced within the WMD. Root-boring flea beetles *Aphthona flava* and *Aphthona lacertosa* have also been introduced into leafy spurge infestations in several locations.

No new releases were made within the WMD in 2003. Literature and studies are now indicating that biological control of Canada thistle will likely not occur in wide spread areas and that other means of control are more successful.

b. Chemical Control

Currently, chemical control is the primary control technique used on the Sand Lake WMD. Herbicides are applied to noxious weed infestations when other alternatives are either ineffective or impractical. Leafy spurge and Canada thistles are the primary species controlled using this method. Time of application is generally from late May to early July, but early fall chemical applications to these deep-rooted perennials are very effective. Fall chemical applications are typically preceded by haying or mowing activities to reduce seed production and to stimulate regrowth.

The types of herbicides, methods of application, rates, and affected habitat types are reviewed by a Service committee prior to their use on the Sand Lake WMD. Health and safety and environmental integrity are paramount considerations when considering the use of herbicides. All herbicide applications follow the label guidelines for targeted species. Considerations include the location of nontarget species, soil types, wetland and groundwater locations, and topography. Also, the Service must consider the concerns of adjacent property owners. Staff personnel that are chemical applicators are trained and certified by the State for pesticide application.

During 2003, 49 Waterfowl Production Areas were sprayed in varying amounts to suppress/control the spread of noxious weeds as required by law. A total of 2,553

acres were chemically treated while another 200 acres were mowed to limit seed production and to “set-up” Canada thistle for fall herbicide application.

Herbicide is typically applied with boom sprayers mounted on pickup trucks or by ATVs implementing a focused or spot spray application method.

The number of acres treated using herbicide applications has grown substantially during the past several years. Wet and cool conditions in the mid to late 1990's triggered an explosion of Canada thistle plants and provided ideal growing conditions for this noxious weed species to colonize new areas. Table 6, illustrates the increased effort made to suppress and control thistle invasion on district WPAs.

Table 6.

<u>Year</u>	<u>Chemically Treated Acres</u>
1998	207
1999	325
2000	2,535
2001	2,793
2002	4,207
2003	2,553

The number of acres chemically treated to control the spread of Canada thistle dipped significantly in 2003 as a result of a reduced number of days crews were able to spray caused by poor weather conditions and a reduction in funding to acquire herbicide. Overall increases in thistle suppression efforts over the last four years are due in part to an increased focus by land managers, increased budgetary flexibility, improved chemical application equipment and a requirement that cooperators control noxious weeds while participating in multi-year haying and grazing agreements on WPAs.

c. Mechanical Control

Mowing is used primarily on Canada thistle infestations to limit the development and spread of seed sources. This method is used when the application of other control methods cannot be completed prior to seed formation. Canada thistles are also mowed during the late summer in preparation for a fall herbicide application. Herbicides are applied to the vegetative regrowth when the plants are storing root reserves prior to dormancy.

d. Livestock Manipulation

Grazing with livestock may be used to suppress targeted noxious weed species by manipulating variables including the timing, duration, stocking rate, and intensity of pastures grazed. Suppression of noxious weed species is generally short lived unless a herbicide application is used in conjunction with the grazing treatment. Herbicide applications vary in success depending on climatic conditions and management treatment parameters.

11. Water Rights

In September, an engineering crew from GEI Consultants, Inc., of Englewood, CO, was contracted by the Dam Safety Branch of FWS Engineering to inspect and define rehabilitation cost estimates for repair/replacement of the Zell Lake WPA water control structure.

The concrete sill structure was originally constructed in the mid 1930's by the Civilian Conservation Corps. Since that time, the structure has undergone several minor rehabilitations with the last occurring in the late 1980's. High water levels during the mid 1990's has created erosion problems with the water control structure that are beyond our normal scope of repair. Currently, the water control structure has completely failed and is in dire need of replacement. Riprap placed on the upstream side of the cement structure is the only portion of the structure still intact and is currently maintaining water levels at or very close to appropriated levels.

The proposed rehabilitation project would include replacing the existing cement structure with a sheetpile weir structure, resloping the downstream grade, improving the upstream and downstream riprap, reworking the existing emergency spillway and completing any minor repairs to the adjacent earthen embankment. At years end, the draft replacement plan was still in the development phase.

12. Wilderness and Special Areas

Nothing to Report

13. WPA/Easement Monitoring

In addition to WPAs, Sand Lake Wetland Management District at the close of 2003 was responsible for 575,212 easement acres comprised of 331,453 grassland easement acres, 228,607 wetland easement acres, 15,152 FmHA easement acres and 800 tallgrass prairie easement acres. The combination of WPAs and easement holdings makes Sand Lake Wetland Management District the largest Wetland Management District.

Easement monitoring flights are conducted annually to insure compliance with the provisions of the easement contract. Easement flights are conducted in early July to monitor grassland easements while wetland easement flights are typically conducted in late October or early November. Ground checks are always completed with two law enforcement officers and typically out number violations two or three to one.

Grassland easement flights revealed 23 violations and numerous other ground checks. The majority of violations consisted of early haying prior to July 15. This number is slightly higher than normal, but is reflective of the dry conditions and a producers want to harvest the grass in as prime a condition as possible. Four citations were issued for early haying violations. This was the second violation of this nature for three landowners and a third for another.

Fall wetland easement flights revealed 12 easement violations all consisting of fill violations. No citations were issued for any wetland easement violations.

Forty easement permits were issued in 2003. Table 7, is a summary of permitted activities occurring on easements within the WMD.

Table 7.

Purpose	Number of Permits Issued
Construct dugout	5
Burn wetland vegetation	9
Create food plot on grassland easement	4
Reestablish grass on grassland easement	4
Bury/replace public utilities (power/waterlines)	4
Establish trees on grassland easement	4
Pump water for use in road construction	2
Wetland enhancement	1
Clip weeds prior to July 15 on grassland easement	3
Hay grassland easement prior to July 15	1
Hay FmHA easement with "B" restriction	1
Dugout cleanout	2
Total	40

G. WILDLIFE

1. Wildlife Diversity

Since South Dakota is in the Northern Great Plains, grassland associated bird species are the predominant bird life in the State. Approximately 239 bird species are recorded as regularly occurring within the WMD. About 113 of these species nest within the WMD. Twenty-four other species have been sighted once or twice within the WMD.

An estimated 55 mammal species are found within the eight-county Sand Lake WMD. They range in size from the tiny pygmy shrew weighing only a fraction of an ounce to white-tailed deer weighing over 200 pounds.

Abundance varies with species. Prairie insectivores and new world species of mice common to prairie ecosystems are very abundant, while species like the opossum and some species of bats are very uncommon to the WMD.

Thirty-three species of reptiles occur in South Dakota. Twenty of these species potentially occur within the WMD. These consist primarily of turtles, skink, and snake species.

Seventeen species of amphibians occur in South Dakota. They all could potentially occur within the WMD. These species consist of salamanders, toads, and frogs.

2. Threatened and/or Endangered Species

Numerous threatened and endangered wildlife species call the Sand Lake WMD home. These species range from resident amphibian and fish species to migrants such as the bald eagle and whooping crane. Sightings of many of these species can be a once in a life time opportunity. The following is a listing of threatened and endangered species that have occurred or have the potential to occur within the Sand Lake WMD:

The bald eagle can be seen throughout the WMD, primarily along rivers and large lakes as the eagles migrate in the spring and fall. Bald eagles have been successfully nesting in eastern Brown County since 1994.

The whooping crane passes through the WMD during its migration. Most sightings occur in the western counties of the WMD. Whooping cranes in the WMD primarily use shallow wetlands and adjacent uplands.

The peregrine falcon is occasionally observed throughout the WMD. This species is an uncommon migrant in the early spring and fall, with occasional sightings during the winter.

The Eskimo curlew is nearly extinct. They pass through the Great Plains on their migrations and can potentially occur in wet meadows within the WMD.

The interior least tern nests along the Missouri River in central South Dakota. The river borders the three western counties in the WMD. Potential suitable habitat for interior least terns is found on WPAs along the Missouri corridor.

The piping plover is a federally threatened species that occurs along the Missouri River bordering the three western counties in the WMD. Habitat use by piping plovers is limited primarily to alkali wetland sites. The most recent survey of piping plovers in the WMD was completed in 2001 with no individuals observed.

South Dakota Game Fish and Parks has identified seven species of mammals which are considered threatened, endangered, or as candidate species for listing within South Dakota. These are the black-footed ferret, black-tailed prairie dog, black bear, mountain lion, river otter, swift fox, and the gray wolf. The black-footed ferret, black bear, mountain lion, river otter, and swift fox are listed as State "Endangered." The black-tailed prairie dog is a candidate species, and is found in the WMD particularly in the western counties. However, a small population was also recently discovered in Spink County on the eastern edge of the District. Several unconfirmed sightings of mountain lions and river otters in Brown County have occurred this past year.

State threatened reptile species include the Blanding's turtle, False map turtle, Northern lined snake and the Eastern hognose snake.

The Dakota skipper is the only invertebrate species listed as a candidate within the WMD. Several surveys conducted on the WMD for the Dakota Skipper confirmed sightings on the Buntrock WPA and The Nature Conservancy's Ordway Prairie Preserve in McPherson County. However, all WPAs in McPherson and Edmunds counties consisting of native prairie are considered to be potential sites for skippers.

State threatened fish species include the northern redbelly dace, trout-perch, longnose sucker, pearl dace, sicklefin chub, sturgeon chub, and plains topminnow. State endangered species include the central mudminnow, pallid sturgeon, Topeka shiner and the banded killifish. The pallid sturgeon and the Topeka shiner are the only two Federally listed fish species in the WMD. South Dakota State University personnel conducted a survey of the Elm River in Brown County this summer and discovered Topeka Shiners on two different occasions.

The plant communities supporting the western prairie fringed orchid include tall grass calcareous silt loam prairie or sub-irrigated sand prairies. Remnant tracts of bluestem dominated sub-irrigated sand prairies still exist in northeastern Brown County. Although no orchids have been documented in the WMD, suitable habitat does exist in this area. Several WPA's with this habitat are located in this area. A search conducted in the Hecla Sandhills found none in 1996.

3. Waterfowl

The Sand Lake WMD lies within the Prairie Pothole Region of North America. This area is of prime importance for producing many of the nation's waterfowl species. In addition, the

WMD receives migrational use by 25 species of waterfowl. The 2003 breeding population estimates for 13 species of ducks using the Sand Lake WMD was 501,528. The breeding estimate for all of the South Dakota was 1,012,217. This year, the Sand Lake WMD produced an estimated 50% of all the ducks produced in South Dakota.

Waterfowl species that breed and nest within the WMD include the mallard, American black duck (infrequent), gadwall, northern pintail, green-winged teal, blue-winged teal, American widgeon, northern shoveler, wood duck, redhead, canvasback, lesser scaup, and ruddy duck. Cinnamon teal, ring-necked duck, common goldeneye, bufflehead, hooded merganser, common merganser, and red-breasted mergansers migrate through the WMD.

The tundra swan is the only species of swan to occur within the WMD. Swans can be commonly seen throughout the WMD during the fall migration.

Four species of geese visit the WMD during the spring and fall migrations. Canada geese, white-fronted geese, snow geese, and Ross' geese pass through the WMD in the spring and fall. Canada geese and snow geese are the most abundant species. Canada geese are also common nesters in the area. Recent years of above average precipitation have helped the Canada goose population in the Sand Lake WMD explode. The healthy population has been considered a nuisance by some local farmers, while other landowners are enjoying the sight of Canada geese nesting in ponds not historically used by the birds. The abundance of geese has prompted the implementation of a early Canada goose hunting season for the last several years in an attempt to reduce the number of "local" birds.

In recent years, a Spring Snow Goose Conservation Order has been issued, which allows hunters to help preserve the snow goose population and it's habitat by reducing their numbers through hunting in the spring. This Conservation Order runs until the end of May, although most snow geese concentrations have left the WMD by late April or early May.

In late November, a concerned sportsman contacted the Refuge Headquarters to inform us that he had retrieved 44 neck collared snow geese from a small lake near Scatterwood Lake in southeastern Edmunds County. Several of the birds were shot as they struggled to fly with severely iced-up neck collars. The ice formations on many of the collars were the size of a softball or larger in diameter at the time the birds were found. The rest of the birds were chipped out of the ice after the lake froze. These birds likely drowned and froze in the ice due to the heavy iced-up collars. This event occurred during a snowstorm/ground blizzard on November 23. During this time there were several hundred thousand snow geese using the Scatterwood Lake area as well as the rest of the WMD.

Northern Prairie Wildlife Research Center conducted a nesting use and success study in McPherson County. The emphasis of the study was to compare waterfowl nest success in native planted CRP and tame grass. The one year results of the study concluded a 25.5% nest success in planted native grasslands and a 19.1% success in tame grasslands. Waterfowl appeared to prefer nesting in tame grassland but only by a small margin. This study is set to continue over the next few years.

4. Marsh and Water Birds

The wetlands in the WMD provide breeding and nesting habitat for a number of species of marsh and water birds including: eared grebes, western grebes, pied-billed grebes, great blue herons, black-crowned night herons, cattle egrets, American bitterns, white-faced ibis, Virginia rails, soras and American coots.

5. Shorebirds, Gulls, Terns, and Allied Species

The diversity of wetlands and associated grasslands in the WMD attracts a great variety of shorebirds and wading birds. Many shorebirds use the mudflats and shallow portions of wetlands during their migrations in the spring and fall. Killdeer, upland sandpipers, willets, American avocet, Wilson's phalarope, Franklin's gulls, Forster's terns, and black terns are common.

6. Raptors

Red-tailed hawks, Swainson's hawks, ferruginous hawks, and northern harriers are the most common raptors using the WMD. They all nest within the WMD. Other species using the WMD are: sharp-shinned hawk, Cooper's hawk, rough-legged hawk, golden eagle, prairie falcon, Merlin, and American kestrel.

7. Other Migratory Birds

Nothing To Report

8. Game Mammals

White-tailed deer are the most common game animal. Mule deer are present in the western portion of the District with occasional sightings in the central and eastern portion of the WMD. Common furbearers include red fox, coyote, raccoon, mink, muskrat, and beaver. Sarcoptic mange has contributed to a reduction in the red fox and coyote populations during the past several years. However, recent sightings of coyotes throughout the District indicate that their population appears to be on the increase. This is welcomed news for waterfowl production.

9. Marine Mammals

Nothing To Report

10. Other Resident Wildlife

The ring-necked pheasant, gray partridge, and sharp-tailed grouse are common upland species that nest within the WMD. The greater prairie chicken can be found in isolated areas of the WMD and is an uncommon nester.

Pheasants and sharp-tailed grouse were exceptionally abundant in the District during the 2003 hunting seasons and attracted a large number of hunters to the eastern 2/3 of the District. The western 1/3 of the District had average to below average production for these species due to extended dry conditions. Partridge numbers are still well below normal however, sightings are becoming more frequent.

11. Fisheries Resources

Approximately 100 species of freshwater fish inhabit the waters and waterways of South Dakota. Sixty-eight of these species have the potential to occur in lakes and wetlands within the WMD. The fishery associated with the WMD would be classified as a warm-water fishery with low numbers of game fish and high numbers of minnows, carp, and suckers. Due to the shallow nature of the lakes and wetlands within the WMD, they have a high probability of winterkill.

12. Wildlife Propagation and Stocking

Nothing to Report

13. Surplus Animal Disposal

Nothing to Report

14. Scientific Collections

Nothing to Report

15. Animal Control

For the second year in a row, a special use permit was issued to the South Dakota Game Fish and Parks Department to allow aerial shooting for predator control when a recent livestock loss has been documented. The permit was issued to the South Dakota Game Fish and Parks Department so they could respond to verified coyote depredation loss (dead livestock) within the boundaries of the Sand Lake WMD lands. This permit was not for population maintenance and was subject to the following conditions:

1. A recent livestock loss must be documented by SD Game Fish and Parks Dept.
2. For coyotes to be taken on WPAs, the coyote must first be spotted from the air on property where the documented livestock loss occurred.
3. A report of coyotes taken in this manner must be reported to Sand Lake WMD at the end of this permit period.

There were no reports of coyotes taken on WPAs by aerial shooting this year.

16. Marking and Banding

The following is a detailed list of the 4,493 ducks banded on the WMD during 2003: 11 American wigeon; 1,183 mallards; 462 gadwalls; 1,276 northern pintails; 59 wood ducks; 3 redheads; 6 greenwing teal, 1,887 bluewing teal, 19 lesser scaup, 2 Northern shovelers and a ruddy duck. All of the duck banding was completed in McPherson County by the South Dakota Game Fish and Parks Dept. and Ducks Unlimited.

17. Disease Prevention and Control

Botulism is a perennial problem within parts of the WMD. This year was no exception as botulism was again a problem on Swan Lake in Walworth County. The outbreak was caught early and with the help of the State Game, Fish and Parks Department the die off was minimized. A total of 278 birds was retrieved.

Zabrasha Game Production Area in Brown County also experienced a botulism outbreak. Once again the outbreak was caught early and only 300 birds were picked up.



Figure 6, American Wigeon, cause of death = botulism

18. Partners For Fish and Wildlife Program

Two thousand three was another busy year for the Partners for Fish and Wildlife (PFW) staff. The PFW staff Biologist administered funds in an eight county area. These funds were part of a grant received from the North American Wetlands Conservation Act (NAWCA). Using money received from the NAWCA grant, a total of 105 Wildlife Extension Agreements (WEAs) was signed in 2003. Projects completed in 2003 totaled over \$200,000 and created, managed or restored over 16,200 acres of wildlife habitat.

Our primary objective is to restore, enhance and create grassland and wetland habitat for nesting and breeding migratory bird species. Although not many drained wetlands exist in the WMD, landowners showed a lot of interest in restoring these basins primarily due to the wetland and grassland easement programs. Wetland creation consumed the majority of the staff's time followed closely by wetland restoration activities.

Wetland creations function as both brood water for waterfowl and as livestock water. Because the majority of dams constructed also serve as a valuable source of livestock water, they are designed with a 12 foot deep dugout inundated by the newly created wetland. Dams are also designed to withstand a 25 year rainfall event. Small flat watersheds are therefore sought out to keep construction costs down. All wetland creations are built on a 75:25 cost share basis with 25% of the cost being paid by the landowner. Construction areas are seeded by the landowner with grass seed provided by the Service. Dam grades are also fenced by the landowner with fence material provided by the Service to prevent damage by cattle using the area. Table 8, delineates the projects and associated acres completed in 2003.

Table 8.

Project Type	Number	Acres Created	Acres Enhanced	Restored Acres
Wetland Creation	39*	202.3	-	-
Grazing Systems	23	-	6,716.4	-
Native Grass Seeding	7	-		490.5
Riparian Fence Out	1	-	32	-
Wetland Restoration	28	-	-	140.5
Dugouts	22	-	8,621	-

* number of agreements written



Figure 7, Private land wetland creation in the Sand Lake WMD

H. PUBLIC USE

1. General

The majority of recreational uses in north-central South Dakota is centered around outdoor activities, particularly fishing and hunting. Lake Oahe on the Missouri River is the biggest and probably the most popular fishery within the WMD. Other rivers, including the James, also offer good fishing opportunities. The WMD is also well-known for its ring-necked pheasant and white-tailed deer hunting. Hunters arrive from all over the United States to participate in these hunts. The area also offers some of South Dakota's finest waterfowl hunting and other small game hunting which attracts hunters from throughout the State.

Other outdoor activities such as photography, camping, and hiking are also present in this region. The South Dakota Game, Fish and Parks Department has a few State Parks and Recreation Areas that are used primarily in the spring, summer and fall seasons for these activities.

Many small towns in the area host special activities throughout the summer and fall that attract many visitors. The largest city in the WMD is Aberdeen. Many recreational opportunities evolve in and around this city due to its relatively large population (26,000) for the region.

2. Outdoor Classrooms - Students

Sand Lake NWR Complex personnel conducted the first ever Hunter Education class at the Refuge Headquarters and Hecla Gun Club. The class consisted of two 3 ½ hour lectures in the

visitor center at the Refuge Headquarters and a 4 hour hands on, outdoor classroom at the Hecla Gun Club. Approximately 28 students attended the class. They came from Aberdeen, Hecla, Groton, Claremont, and Britton. The class was held the first week of December. Soderlund, Powers, Flanders-Wanner, Schultze, and Jave all gave part of the lecture portion of the class. Haaland even helped out by baking cookies for the classes first lecture. It was a cooperative effort with the Hecla Sportsman Club, as Jay Osterloh and other members were a great help on the range. Everybody's name who got a perfect test score was placed into a hat and a winner of a youth waterfowl hunt with Soderlund was drawn. Dale Boynton Jr was the winner. Although Dale had many opportunities, he failed to harvest a duck during the hunt.

3. Outdoor Classrooms - Teachers

Nothing to Report

4. Interpretive Foot Trails

Nothing to Report

5. Interpretive Tour Routes

Nothing to Report

6. Interpretive Exhibits/Demonstrations

Nothing to Report

7. Other Interpretive Programs

Nothing to Report

8. Hunting

The 43,738 acres of Waterfowl Production Areas in the Sand Lake Wetland Management District provide a wealth of hunting opportunities for local and out of state hunters. The hunting seasons begin each year with the opening of dove on September 1. During the last few years, a special resident Canada goose reduction season has also opened up on September 1 and ran until the 15th of the month. The hunting seasons end Feb 28 each year with the close of squirrel and rabbit. But in recent years, a Spring Snow Goose Conservation Order has been issued, which allows hunters to help preserve the snow goose population and its habitat by

reducing their numbers through hunting in the spring. This Conservation Order runs until the end of May although most snow geese concentrations have left the WMD by late April or early May.

Each of the 162 WPAs in the WMD have unique and individual characteristics. Some offer excellent dove hunting, some swan hunting and yet others offer fantastic deer or sharp-tailed grouse hunting, and lets not forget the pheasant hunting. Sharp-tailed grouse hunting opportunities tend to be best in the northcentral part of the WMD, while world class pheasant hunting can be found virtually everywhere else. Depending on the habitat of the WPA, most WPAs offer outstanding deer hunting. Waterfowl hunting can be found on every WPA when water conditions are favorable. In recent years, waterfowl hunting on WPAs has been exceptional. Waterfowl hunting in the last 10 years on the WMD has been second to none, with unlimited opportunity and very little competition from other hunters. All species of waterfowl can be found on the WMD during the hunting seasons. Larger wetlands can host large concentrations of swans, geese and diver ducks and smaller more temporary wetlands, when wet, hold good numbers of dabbling ducks such as, blue-winged teal and gadwall. Although, this years precipitation levels in the eastern 1/3 of the WMD were above normal, most wetlands had dried up or were drying up by the time they froze over in late November. Some wetlands were dry this year for the first time in over ten years. If late winter snow or spring rains don't come soon, 2004 will be even more challenging for waterfowl hunters due to lack of wetlands to hunt and a reduced population.

Tom Roster Shooting Clinic - Chamberlain, SD 2003

Soderlund and Powers attended a CONSEP shooting clinic sponsored by the South Dakota Game, Fish & Parks and presented by Waterfowl Gunning/Ballistic expert Tom Roster. The two day clinic is designed to teach us(students from GFP, USFWS and area hunters) how to reduce crippling rates and more effectively kill waterfowl while hunting. With the information we gain, we are then supposed to relay it back through our everyday contact with the public. Below are key points made during the clinic:

Roster's presentation focused on two main areas:

1. Recruitment of young/new waterfowlers into the sport and the increasing age of the average waterfowl hunter. This decline could jeopardize our efforts to acquire additional properties and easements. Fewer hunters = fewer duck stamps purchased = less \$ for habitat acquisition. In reality this is a big issue with huge implications for the Sand Lake WMD.
2. Increasing our shooting skills to reduce wounding/crippling rates. The idea behind this is to close the door on anti-hunters using this as a means to erode hunting and potentially attempt to take these opportunities away. In the United States, all hunters comprise

approximately 6% of the nations population and waterfowl hunters less than ½ of 1 percent.

The Facts and/or the Myths

1. Crippling of birds is more debilitating to the waterfowl population than lead poisoning. Approximately 2.5-3.0 million birds are unretrieved/wounded annually. This number represents losses that are double those attributed to lead poisoning.
2. Hunter reported crippling rates have not changed significantly since 1965 even with the switch to non-toxic shot. Reported loss rate averages 16.8% annually in the Central Flyway over the last 45 years.
3. 80% of wounded/crippled birds are dead within 2 weeks of being shot.
4. Trained observers were used in a study to determine more precisely the number of birds wounded or crippled. The study indicated that approximately 30% of the birds shot at were hit/crippled. Observers were trained to look for falling feathers, blood spots, erratic flight patterns and birds that dropped but were not recovered. Roster has melded this information with the hunter reported losses to (16.8%) to establish a crippling loss rate of 25%. Roster goes on to explain that surveys of non hunting public indicate that a loss rate of less than 10% would be acceptable. Therefore, hunters need to be aware of the gap and work to reduce the margin to avoid the possibility of anti hunters undermining the sport.
5. Old shotgun barrels are not necessarily precluded from shooting steel shot; however, the majority of problems such as barrel bulge occur in full choke barrels shooting large shot. Secondly, the issue of barrel bulge is generally overstated and does not affect the patterning ability of the shotgun.
6. Shot string associated with steel shot are shorter, denser and narrower than lead. This is due to the roundness of the steel pellets. The rounder/more precise the pellets, the better the pattern at longer distances. Patterns with steel are generally 6-8 feet long and 2.5 - 3 feet wide (top to bottom) at 40 yards. Lead patterns at the same distance are 12-16 feet long and 4-5 feet wide.
7. Steel shot loads in the 1200-1400 FPS range are best. Velocity means nothing if your shots are within 40 yards and can actually work against you if you are shooting over 40 yards.

8. If you miss a bird, miss to the front to reduce crippling. The thinking is that the vitals are all in the front half of the bird. If you miss no big deal, however, the odds are in your favor for making a clean killing shot.
9. Pheasants are harder to kill than ducks because of the way that pheasants are hunted in the U.S. versus European counties (flushed vs driven). Flushing pheasants typically present a shot at the tail end of the bird where the heaviest feather concentration is located. Secondly, in order for pellets to penetrate the vitals from this direction they need to pass through the gizzard. Because of the thickness and heavy muscle of the gizzard a larger pellet size is recommended. When hunting pheasants, Roster recommends #2 shot as his first choice and #3 shot for his second.
10. A couple more recommendations for reducing crippling
 - a. Shoot at the tail end of flocks. If you miss you will not likely hit any other birds.
 - b. Limit you hunting party to no more than four hunters and take turns shooting. This will reduce confusion on who is shooting at what.
 - c. Sacrificing pellet count for velocity is not recommended. Most hunters will shoot just as well if not better with slow loads.
 - d. Patterning of your equipment (guns and shells) is critical to understanding your capabilities to make a clean kill.
 - e. The lead that you put on a bird at 20 yards is the same perceived distance as if you were shooting at 30, 40, or 50 yards. For example, if you perceive your lead at 20 yards to be 2 feet, your lead at 30 yards will also need to be 2 feet.
11. The only difference between “cheap steel”(Win. Xpert, Rem. Sportsman, etc.) and the “higher priced steel” is the process used when forming the pellets. Cheap steel pellets are two half spheres “stuck” together. This sometimes makes for non-perfect spheres, which may throw off your pattern, but only from further distances. Thus, when shooting at birds within 45 yards it is not necessary to use higher priced steel shot. Also, it was suggested that you should stick with one of the big three shotgun shell manufacturers (Rem., Win., Fed.).
12. As previously mentioned, **pattern your shotgun** with various chokes at different distances with different loads to see which will be most effective at the ranges you most often shoot. Also note, a full choke from one gun may not be a full choke in another, etc. Manufactures

differ between guns, chokes, ammo, velocity etc. and all will impact your pattern.

13. Take a kid hunting. Not just once, but a few times every year. Once is better than none, but a few times a year is what gets new people into the sport long-term.

9. Fishing

At this time, very little fishing opportunity exists on WPAs within the WMD. In January and February 2001, a perch fishery was found on Perch Lake in McPherson County. Since that time, due to poor fishing, very little activity has taken place there. Most of the fishing occurred on Ducks Unlimited Inc. properties with the majority of the fishermen using an access road on Perch Lake WPA to get to the lake. SD Game, Fish & Parks Dept. conducted a lake survey during the summer of 2003. Reports from the survey indicated that there was many, many perch in the lake, but the lake also had an enormous amount of amphropods (fresh water shrimp). Poor fishing may be blamed on the large amount of prey base found in the lake.

A number of other WPAs in McPherson County have been stocked with fish by GFP, such as Opp WPA, which became a perch fishery during the winter of 2002. Burgeson Dam on Perch Lake WPA and Long Lake WPA have been stocked by GFP. Most other WPAs and bodies of water in the Long Lake area have been stocked illegally by local residents in the surrounding areas. If water levels stay consistent or rise in future years, these WPAs should also provide quality fishing experiences.

10. Trapping

Due to low fur prices and lack of interest in trapping, very little use of WPAs for trapping has been observed in recent times. Some trapping has been observed by muskrat trappers utilizing the numerous small wetlands across the WMD, but even that has been minimal.

11. Wildlife Observation

Sand Lake NWR has superb wildlife observation opportunities, but the staff sees insignificant public interest in wildlife observation on the WMD. It may exist, but we know very little about how much is being done.

12. Other Wildlife Oriented Recreation

Nothing to Report

13. Camping

Occasionally hunters attempt to camp on WPAs in the district. If LE staff encounter these people, we ask them to pack up and leave as camping is not permitted on WPAs. No reports of camping occurred this year.

14. Picnicking

Nothing to Report

15. Off-Road Vehicling

Nothing to Report

16. Other Non-Wildlife Oriented Recreation

Nothing to Report

17. Law Enforcement

Law Enforcement activities in the WMD consist mainly of patrolling and checking hunters. During last fall, at least one of the four Refuge Officers was on duty each weekend from opening day of the waterfowl season through mid-December. Officers patrolled the refuge and the WMD depending on where activity was occurring. In total, Refuge Officers had approximately 520 hunter contacts on the WMD. Approximately 4 violations were turned over to state officers. Refuge Officers wrote approximately 12 citations to hunters throughout the hunting season. Also issued were a few verbal warnings. In addition to hunter contacts and investigations, Officer Peterson investigated a case of livestock trespass on Adam-Geinger WPA in McPherson County.

Officers Powers, Glup, Soderlund, and Schultze attended the annual law enforcement in-service at Marana, AZ. New Glock model 22 handguns were issued to all Refuge Officers during 2003's in-service. The .40 cal. Glock 22 is now the standard handgun carried by all 500+ USFWS Refuge Officers.

Soderlund attended Refuge Officer Basics (ROBS) in February. The ROBS course was conducted in a week for the first time(formally 2 week course). The course included lecture on all Acts that USFWS Officers have authority over and many hours of Pressure Point Control Tactics (PPCT). Upon completion of this class, Soderlund has completed all minimum, mandatory requirements for his Law Enforcement credentials.

18. Cooperating Associations

Nothing to Report

19. Concessions

Nothing to Report

I. EQUIPMENT AND FACILITIES

All law enforcement vehicles were equipped with proper emergency equipment, such as overhead red and blue emergency lights, wig-wags, amber rear flashers, siren, and a PA system. This brings our LE fleet closer to meeting state laws requiring certain emergency equipment. Soon the vehicles will be equipped with a new high-band radio system, making it easier and safer for Sand Lake Officers to do their job.

1. New Construction

Nothing to Report

2. Rehabilitation

With the help of many of our cooperators conducting management activities on the WMD's this year, we were able to construct approximately 2.25 miles of fence. This new fence greatly increases our management abilities. The WPAs which received fence construction are as follows:

Perch Lake WPA	-	1.0 mile
Fiekert WPA	-	0.5 miles
Schnabel-Hoff	-	.75 miles

In addition to fence construction, an old building site was filled in and a dam was repaired on Perch Lake WPA and flowing water wells were closed on Heis and Christianson WPAs.

There was also an effort to finish placing boundary signs within the District. Approximately 70 new signs were placed on WPAs during the summer by seasonal help essentially completing a two year project to replace faded or damaged signs.

3. Major Maintenance

The Sand Lake Wetland Management District cohabits its headquarters with that of Sand Lake National Wildlife Refuge and is located on the Refuge. The operations and facilities that support the management of the District are shared within the Complex. See the Sand Lake NWR for items listed under this category.

4. Equipment Utilization and Replacement

The equipment used to manage the WMD is shared with Sand Lake NWR. See the Sand Lake NWR for items listed under this category.

5. Communications Systems

Nothing to Report

6. Computer Systems

Nothing to Report

7. Energy Conservation

Nothing to Report

8. Other

Nothing to Report

J. OTHER ITEMS

1. Cooperative Programs

Nothing to Report

2. Other Economic Uses

Nothing to Report

3. Items of Interest

Nothing to Report

4. Credits

Neil Powers wrote section A, C, F, J and compiled and reviewed the report

Don Soderlund wrote sections A,B,E,H and I

Al Olson wrote section A, D and G

Jay Peterson completed the final review and assembled the final document

Marcia Haaland completed the final review and formatting.

K. FEEDBACK

Nothing to Report

THE END

